# Extreme Environment High Temperature Communication Systems, Phase I

Completed Technology Project (2006 - 2006)

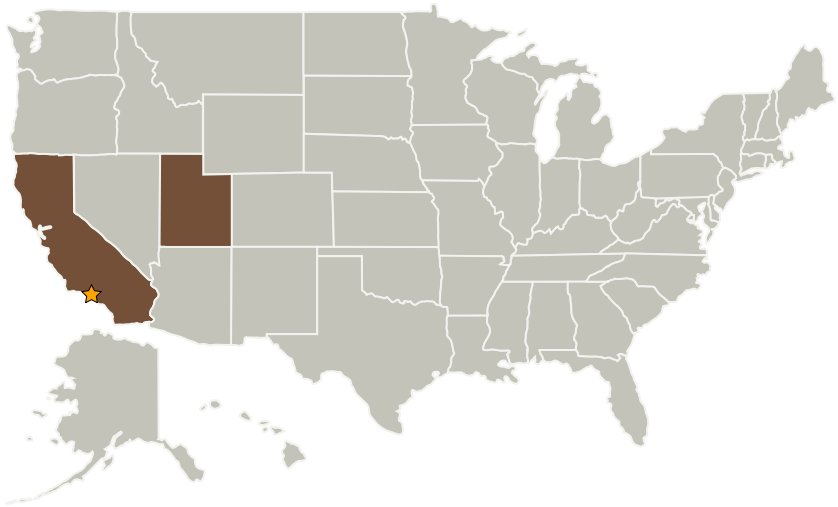
## Project Introduction

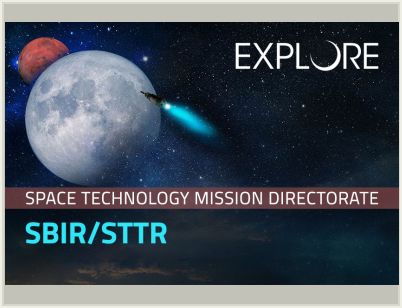
The purpose of this project is to develop and demonstrate a communications system capable of operation at extreme temperatures and pressures in hostile and corrosive environments such as found on the surface of the planet Venus. Although already explored by various orbiters and short-lived atmospheric probes and landers, Venus retains many secrets pertaining to its formation and evolution and also the ability to further probe and investigate Venus' surface is of significant scientific value. However the measurement of data and collection of information in an extreme environment is of limited use or value unless the data and information can be sent out of the environment. This proposed project will address vital communication needs of the future in situ exploration of Venus and atmospheric probes for giant planets. The technology to be employed in the proposed extreme environment communications system is based on a proven class of electronic devices called solid state vacuum devices (SSVD

TM

s). S-band (~ 2 to 4 GHz) power amplifiers and transmitters along with S-band receivers will be designed and built in this proposed SBIR project to enable essential and critical communications between vehicles and probes located on Venus' surface and systems in orbit around Venus.

## Primary U.S. Work Locations and Key Partners



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## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Center / Facility:**

Jet Propulsion Laboratory (JPL)

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

**Small Business Innovation Research/Small Business Tech Transfer**

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| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| ★Jet Propulsion Laboratory(JPL) | Lead Organization | NASA Center | Pasadena, California |
| InnoSys, Inc. | Supporting Organization | Industry<br>Small Disadvantaged Business (SDB), Women-Owned Small Business (WOSB) | Salt Lake City, Utah |

| Primary U.S. Work Locations | |
|---|---|
| California | Utah |

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

## Technology Areas

**Primary:**

- TX08 Sensors and Instruments
  - TX08.3 In-Situ Instruments and Sensors
    - TX08.3.6 Extreme Environments Related to Critical System Health Management